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Economy's Woes Bring Science New Friends

The nation's economic anemia is paradoxically providing relatively favorable circumstances for the growth of science and technology as politicians note the vitality of many high-tech industries and tune in to pleas for supporting their underpinnings in education and research.

That does not mean there is going to be a return to spectacular growth rates but what is evident from the performance of the last Congress and the thrust of current political sentiments is that, with a few exceptions, federal programs for research and development have acquired considerable resistance to budget slashing. As can be seen in the table on page 6, Congress, while partially granting the Administration's request for a huge boost in defense R&D, simultaneously increased non-

NIH Grapples With Growing Demands on Budget—Page 4

defense R&D by $1.4 billion over the Administration's request. The big gainers were in energy, space, health, and natural resources, plus the National Science Foundation, upon which Congress bestowed $15 million for science-education activities that the White House had sought to eliminate.

Though the political speech circuit is never lacking for kind words about the economic value of R&D, it is now well-populated with zealous apostles who are going about the country urging massive efforts—often involving federal-industrial collaboration—to invigorate science in the schools, academic research, and industrial innovation. Among the so-called Atari Democrats, the leader in calling for national rejuvenation through educational and high-tech endeavors is Senator John Glenn, of Ohio, followed by Senators Gary Hart, of Colorado, and Alan Cranston, of California—all eyeing the White House. One measure of Congressional interest in the subject is that the House Science and Technology Committee, with far-ranging legislative authority over federal R&D activities, is no longer considered a second-rate assignment.

The fiscal 1984 budget that President Reagan is sending to Congress at about the same time that this issue of SGR is going to press is reported to treat R&D rather generously. The National Science Foundation is said to be scheduled for an 18 percent increase—which is even better than it looks, given that budget counters are now talking of an "inflation dividend" from the sharp drop in the consumer price index. But, useful as the annual presidential budget may be in ordinary times for signaling an administration's priorities, the 1984 budget—for the year beginning next October 1—comes at a time when the Reagan Administration is in great confu-

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It's in the Mail

As of January 25, an indeterminate but apparently large portion of the January 15 issue of SGR (Vol. XIII, No. 1) had not been seen since it was delivered to and accepted by the Main Washington Post Office of the US Postal Service on Friday, January 14. We will not go into the mysteries and adventures of attempting to trace this mailing. If you have not received your copy, please write (SGR PO Box 6226, Washington, DC 20015) or call collect (202/887-0250), and a copy will be promptly dispatched.

In Brief

Bracing against another attempt to legislate the establishment of a separate Arthritis Institute in its midst, the National Institutes of Health has signed on the National Academy of Sciences' Institute of Medicine to study the NIH structure and recommend criteria for revisions. It will be a friendly study, unlike the Arthritis campaign, which was vehemently opposed by NIH leaders, who contended the proposed institute was unnecessary and expensive.

The departure of Secretary Richard S. Schweiker from the Department of Health and Human Services is a source of considerable concern in the biomedical-research sector of Washington science-policy. Schweiker, with a personal interest in NIH affairs dating back to his Senate service, helped shield NIH against some grand money-saving schemes of the Office of Management and Budget. His successor, former Rep. Margaret Heckler, served on several committees with research jurisdictions, but never was regarded as especially knowledgeable in that area.

Federal support for basic research has remained almost level over the past two years in terms of purchasing power, according to the latest budget analysis by the American Association for the Advancement of Science. Though up in dollars by 15.3 percent during 1981-83, the "real" gain amounts to 1.3 percent, the AAAS says.

...Science Education Seems Sure for a Boost

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sion over economic policy and a real Democratic majority has taken the House. The budget as proposed and the budget as finally adopted are often quite different, but the conditions for them to be remarkably different have rarely been so great.

In that context, the odds are that federal R&D and related activities, rather than suffering from the deficit-cutting fervor now sweeping Washington, might easily emerge as rare exceptions by at least holding their own, and, in some cases, actually growing substantially.

Starting with elementary- and secondary-level science education, it is now obvious that the Reagan Administration has evoked a sense of revulsion by insisting that the disintegration of these educational fields is none of Washington's business. The establishment last year of an education study commission by the Board of the National Science Foundation is quite correctly seen in Congressional and education circles as merely a time-consuming ploy. The commission has been diligently going about its work in preparation for winding up its existence next October. But people associated with it say that it has found little or nothing that wasn't previously well known about the infirmities of science in schools, and the most hopeful thing to be said for it is that it is doing a good job of building agreement that powerful remedies are in order. The $15 million that a generally tightfisted Congress gave NSF for science education can reasonably be regarded as a small downpayment on that task.

Numerous bills introduced in the last Congress for stimulating high-tech industry and related education (SGR Vol. XII, No. 19) are a precursor of what's to come once the 98th Congress gets down to business. While the formulas under discussion vary widely, what they often call for is providing federal funds for academic activities that can link up with industrial needs.

What's interesting to note in this connection is that the White House Office of Science and Technology Policy has been looking into ways to stimulate high-tech industrial activity. Reaganite ideology forbids anything too active or expensive on the part of the federal government. But while the subject wasn't even deemed worthy of White House interest two years ago, the Administration's economic failings have inspired an interest.

Biomedical research, deprived of the rapid growth to which it had become accustomed, remains in the financial doldrums, even with Congress's customary helping

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State of Union Lauds R&D

Mr. Reagan's State of the Union Message was sprinkled with a perhaps unprecedented number of references to technology and education. The Democratic response that followed immediately also emphasized those subjects.

Thus, in following the increasingly popular theme of high-tech to the rescue of the economy, Mr. Reagan referred to the need to "improve our technology," and declared that "education, training and retraining are fundamental to our success, as are research, development and production." Adding that "We Americans are still the world's technological leader," he warned that Japan outproduces the US in engineering graduates, and cautioned that "If a child does not receive adequate math and science teaching by the age of 16, he or she has lost the chance to be a scientist or engineer."

He also spoke of "growth areas of high technology," "the man-made miracles of high technology," the "dawning high technology age," "the frontier of high technology," and "keeping America the technological leader." He pledged block grants to the states for "upgrading of math and science instruction."

The narrator of the Democratic response, Harry C. McPherson Jr., who was an aide to Lyndon Johnson, called for "A new commitment to the research and development of technology. . .(and) to a skilled and educated work force."

Governor James B. Hunt, Democrat of North Carolina, called for "better teaching and training, a stronger emphasis on math and science, engineering, computer literacy. . ."

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CIA: Ups, Downs in Soviet Education, R&D

Soviet mathematics and science education get mixed marks in that recently released CIA economic study that scoffs at Reaganite hallucinations about an impending Soviet collapse. And doubts are expressed about the Soviet style of organizing research and development, which is described as fragmented and unproductive. But overall, the CIA concludes that the Soviet Union is strong and growing, despite its ideologically based economic troubles.

The study, prepared by the CIA's National Intelligence Council at the request of the Congressional Joint Economic Committee, dovetails with what many academic researchers have been openly stating in recent years about the Soviet economy, education and research included. But, since it's unusual for the CIA to go public with its assessments, the report merits attention as a rare look at a product of the intelligence system; whether it is a hoked-up production for public consumption is another matter.

The Soviet labor force, the report states, is "by world standards...well-trained and well-educated." It goes on to note that "Literacy is by now almost universal in the USSR. The educational level of the population has been rising rapidly. Twenty-three percent of those over 16 in 1979 have completed at least a secondary education (10th grade in the Soviet Union) compared with only 14 percent in 1970." An expansion, though smaller, was noted, too, in university graduates.

"The emphasis on mathematics, engineering and science in Soviet schools," the report continues, "is also a plus for the technologically oriented Soviet society. About one-third of total instruction time in Soviet schools is devoted to mathematics and science. There are serious flaws, however, in Soviet education, including too much rote learning, and, at the university level, narrow specialization early on."

The report, which has the earmarks of a hastily slapped together production, has nothing good to say about Soviet R&D in the separate section devoted to that subject, but elsewhere, it speaks favorably of the Soviet nuclear industry and Soviet military equipment. Thus, it states that "Soviet economic performance has long been impaired by the separation of research, development, and production into different organizations."

Basic research, it goes on, is performed at institutes which "are paid for successful completion of research projects whatever their practical benefit to the economy. . .Design bureaus develop the blueprints for new equipment and are largely rewarded for the successful testing of the prototypes. Rewards are only loosely linked to successful incorporation of the new product into serial production. . .The Soviets have no competitive marketplace to force both developer and producer to introduce better products and technologies. Indeed, hostility to technological change at the producer level is characteristic of the Soviet economy. . ."

As a result of this division of labor, the report states, "Soviet products remain in production for an inordinately long time, new products frequently embody only minimal change, and the fruits of truly advanced research impact on serial production only with great delay. Over the last decade and a half, the Soviets have reorganized development and production establishments to deal with this problem. But the problem persists."

Nonetheless, the report points out, "the highly centralized, rigid system of administering the economy—while perhaps the Soviet Union's major economic millstone—has had its advantages in enabling the leadership to mobilize resources in crash programs to achieve priority objectives."

The "prime example," the Soviet military establishment, has been built up "through centrally directed mobilization and allocation of the USSR's highest quality human and material resources and a rigorous system of quality control in military production that prevents the shoddiness so characteristic of Soviet civilian output."

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R&D *(Continued from page 2)*

of funds beyond the Presidential request. It is doubtful that it can break away in the foreseeable future for a resumption of lusty growth. And, barring that, the National Institutes of Health is going to have to work its way through a difficult series of adjustments in priorities, as reflected in the discussions reported on page 4.

But Congressional sentiment remains strongly favorable toward health research, as can be seen in the nearly successful attempt in the last Congress to add a separate Arthritis Institute to the Bethesda complex. Misguided though it was, in the view of NIH's management, the close call reflected a widespread public desire for more biomedical research. Congress remains sensitive to that desire, which assures that while NIH cannot take off financially, it will continue to be treated relatively well.

The same can be said pretty much across the entire R&D spectrum. There will be no boom, and, in most instances, the fiscal outcome will be short of what Washington's research clients deem reasonable. But, while social services and even defense are succumbing to Washington's budgetary trauma, science, technology, and the educational activities associated with them have come to occupy a relatively privileged position.—DSG

Second Thoughts on NIH Goal of 5000 Grants

Facing a collision between rapidly rising costs and a slowly rising budget, the National Institutes of Health is reconsidering the practicality of its "stabilization" goal of 5000 new and renewed competitive grant awards per year.

Developed as a conceptual framework for biomedical research planning under the Carter Administration, the stabilization program has become the centerpiece of NIH budget designs. When the Reagan Administration's proposed funding for NIH was interpreted to allow only 4100 grants next year, the House Appropriations Committee came to the rescue with additional funds to bring the total up to a respectable 4900 (SGR Vol. XII, No. 21).

But now there are second thoughts within NIH, as Director James B. Wyngaarden stressed on January 19. In his first meeting with the Advisory Committee to the Director—a consulting group of elder statesmen established by his predecessor, Donald S. Fredrickson—Wyngaarden noted that "the stabilization policy also has its down side. In order to fund 5000 new and competing projects," he told the meeting—which was also attended by representatives of each of the institute councils—"dollars have been shifted from other mechanisms in recent years. While the proportion of the NIH budget assigned to support investigator-initiated research has grown, other mechanisms have been curtailed."

The stabilization program, he continued, "has also indirectly exerted pressure on our commitment to support research projects for the life of the award period. After several turns of the ratchet, many institute directors feel that further shifts would seriously limit their ability to meet other programs goals and to maintain program balance. If the rate of increase in percent of budget devoted to the extramural grant component were to continue," Wyngaarden said, "it would reach 100 percent in 1993."

The meeting, designed to air problems rather than design remedies, got a further dose of gloomy assessment about the stabilization program from William F. Raub, NIH Deputy Director for Extramural Research and Training.

Stating that "it's only half-facetious for us to say that if we carry out our extrapolations. . .virtually all the other programs disappear" to support stabilization, Raub acknowledged that funds for scientific equipment were being diverted to meet the stabilization goals. "That's why it's important to step back," he said, "and re-examine the stabilization concept, not to deny it, but as Dr. Wyngaarden has pointed out, to recognize that the issue is far more complicated than any simple expression as '5000 grants,' or any other word or phrase."

William Danforth, Chancellor of Washington University, raised the question of employing some other criteria for support, such as "opportunities, challenges, quality of work." Wyngaarden agreed that "There must be better ways of stating the stabilization concept and addressing the issues." But he pointed out that the numerical goal had a simplicity of political value. "We've been reluctant to abandon it," Wyngaarden said, "because its proven in other arenas to give us a

(Continued on page 5)

Praise for Intramural Work

The following excerpts are from an address by NIH Director James B. Wyngaarden to the January 19 meeting of the Advisory Committee to the Director:

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• During the past year, questions have been raised about the size of the intramural research program. The program decreased from 28.6 percent of the NIH budget in 1955 to about 12 percent for several years, but recently it rose to 13 percent at a time when the proportion for extramural support was dropping. This is an investment that continues to pay off in many ways. Productivity of the program can be measured in the breadth and quality of research publications, number of Nobel laureates, and preeminence in research leadership, such as recombinant DNA technology. A recent assessment of biomedical research institutions based on number and impact of publications placed the NIH intramural program and Harvard University at the top of the list. The intramural training experience has equipped hundreds of young basic scientists and clinical investigators to assume research and leadership roles at universities in this country and around

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SOVIET *(Continued from page 3)*

As for the Soviet nuclear industry, the CIA study says that though it has fallen short of the leadership's goals, it "has also done quite well." The annual increase in nuclear-generated power is going up rapidly, and by 1985 nuclear plants will provide about 11 percent of the USSR's electricity.

(Copies of the report, "Central Intelligence Agency Briefing on the Soviet Economy," 45 pages, are available without charge from Joint Economic Committee, Publications Office, Room G-133 Dirksen Senate Office Building, Washington, DC 20510.)

Wyngaarden Warns that Indirect Costs Are Soaring

(Continued from page 4)

the world. The program is flexible and accommodates studies that require years of uninterrupted investigation and support, such as studies of slow viruses. Many of the mechanisms and techniques for awarding grants and subsidizing training were developed in the intramural program.

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▪ Let me define the problem of indirect costs as seen by the NIH. Prior to 1966, NIH paid a flat rate of 8 percent, then 15 percent and, finally, 20 percent of the total award to cover indirect costs of a research grant. The Wooldridge Report of 1965 recommended that NIH abandon the flat rate, and instead pay a negotiated rate of indirect costs based on audits. For the next six years the average indirect cost rate rose rapidly, and by 1972 amounted to 21 percent of the total research grant dollar. Since that time it has risen less sharply but at a steady rate each year, reaching 30 percent of the total dollar in FY 1982. Put another way, for each dollar of direct costs, 43 cents go to indirect costs. This inexorable rise of the total fraction of the research budget represented by indirect costs has occurred irrespective of the rate of change of the research budget. In virtually every one of the last 16 years, the indirect cost rate has grown faster than the direct cost rate....This has become a divisive issue which requires early resolution. The 1983 [Administration] proposal of paying only 90 percent of negotiated rates was, as you know, rendered unnecessary by Congress when it added funds sufficient to pay full indirect costs. Such a proposal is clearly not a long-term solution, and indeed it was proposed only as an interim device....I hope that a satisfactory resolution of this matter will be developed within the next year.

Animal-Welfare Legislation Stirring in Congress

The momentum that animal-welfare legislation gained in the last Congress appears to be carrying over into the new Congress.

Last year, a bill sponsored by Rep. Doug Walgren (D-Pa.), the "Humane Care and Development of Substitutes for Animals in Research Act," cleared the House Science and Technology Committee and was the subject of a hearing by another committee during the lame-duck session. Given that such legislation had previously attracted little serious legislative attention, it's plain that the animal-welfare issue has attained a new respectability on Capitol Hill. Walgren's office says he plans to push the bill this year. Meanwhile, Senator Robert Dole (R-Kan.) is expected to try again with a companion bill that he introduced late in 1982.

The biomedical-research establishment has taken the line that animal abuse is a rarity and that promoters of the legislation are tunnel-visioned zealots. However, the highly publicized arrest and conviction in 1981 of an NIH-supported researcher in Maryland on charges of cruelty to laboratory monkeys (SGR Vol. XII, No. 12), may have changed a lot of opinions.

Walgren's bill directs government agencies to look for and employ methods of research and testing that reduce, refine, or eliminate the use of warm-blooded animals—a design that's been assailed as clumsy interference with the conduct research.

The animal-welfare advocates are confident. Patricia Forkan, Vice President of the Humane Society of the US, thinks that a bill promoting the use of alternatives will pass in 1983.

However, the issue of care for animals in laboratories is much less clear cut. "We're fighting a myth—that researchers always take good care of their animals...It's almost a motherhood issue," Forkan said. Ironically, this may turn out to be literally true. According to Forkan, there have been rumblings in the Senate about attaching an anti-abortion amendment to any animal welfare bill.

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very effective voice. . .Legislators have found it a very simple entry to a very complex system. And it has helped, in our view, with the funding that we did secure."

Guy M. McKhann, Chairman of the Department of Neurology at Johns Hopkins University School of Medicine, raised a question about NIH maintaining a high level of training support in the face of limited funds for supporting the trainees when they became full-fledged investigators.

Raub responded to the effect that the situation may be worse than it appears. "We've done some analyses and simulations that show that even a relatively modest growth [of research costs]. . .coupled with the NIH policy of multi-year commitments, drives the total cost upward. So what seems to be modest, year-to-year changes in one category can translate into substantial budget increments and downstream commitments," Raub said, adding, "The longterm requires a much more sophisticated and disciplined linkage among those various elements in our planning and the way we execute our programs."

Final Tally on Fiscal '83 Funding for R&D

Compiled by AAAS Office of Public Sector Programs

(Budget Authority in Millions)*

	FY 82 Actual	FY 83 Request	Action by Congress: Approved	Change from Request: Amount	Change from Request: Percent	Change from FY 82: Amount	Change from FY 82: Percent
Defense (military)	$20,692.5	$25,300.8	$23,468.4[1]	-1,832.4	- 7.2%	+2,755.9	+13.4%
NASA	5,981.4	6,612.9	6,809.2	+196.3	+ 3.0%	+827.8	+13.8%
Energy	5,474.9	4,713.2	5,576.6[1]	+863.4	+18.3%	+101.7	+ 1.9%
Health and Human Services	4,008.4	4,127.1	4,372.8[1]	+245.7	+ 6.0%	+364.4	+ 9.1%
National Institutes of Health	(3,452.1)	(3,553.2)	(3,793.3)[1]	(+240.1)	(+ 6.8%)	(+341.2)	(+ 9.9%)
Other HHS	(556.3)	(573.9)	(579.5)[1]	(+ 5.6)	(+ 1.0%)	(+ 23.2)	(+ 4.2%)
National Science Foundation	970.7	1,052.3	1,060.0	+ 7.7	+ 0.7%	+ 89.3	+ 9.2%
Agriculture	827.3	863.0	865.4	+ 2.4	+ 0.3%	+ 38.1	+ 4.6%
Transportation	328.2	388.5	377.4	- 11.1	- 2.9%	+ 49.2	+15.0%
Interior	374.0	349.7	379.2	+ 29.5	+ 8.4%	+ 5.2	+ 1.4%
Environmental Protection Agency	254.4	207.6	218.5	+ 10.9	+ 5.3%	- 35.9	-14.1%
Nuclear Regulatory Commission	222.7	219.7	222.7[1]	+ 3.0	+ 1.4%	0.0	0.0
Commerce	285.4	242.9	281.6[1]	+ 38.7	+15.9%	- 3.8	- 1.3%
Veterans Administration	133.3	142.9	157.8	+ 14.9	+10.4%	+ 24.5	+18.4%
AID	166.7	156.9	161.8[1]	+ 4.9	+ 3.1%	- 4.9	- 2.9%
Labor	8.5	8.7	8.7	0.0	0.0	+ 0.2	+ 2.4%
Education	125.3	102.5	129.4	+ 26.9	+26.2%	+ 4.1	+ 3.3%
Smithsonian	47.9	51.7	51.4	- 0.3	- 0.6%	+ 3.5	+ 7.3%
Tennessee Valley Authority	33.4	26.0	33.4	+ 7.4	+28.5%	0.0	0.0
Housing and Urban Development	20.0	19.5	17.5	- 2.0	-10.3%	- 2.5	-12.5%
Corps of Engineers (civil)	33.1	35.9	33.1	- 2.8	- 7.8%	0.0	0.0
Justice	19.3	21.4	21.4	0.0	0.0	+ 2.1	+10.9%
All Other Agencies	31.2	35.5	35.0	- 0.5	- 1.4%	+ 4.3	+13.8%
Total R&D, above	$40,038.6	$44.678.7[2]	$44,281.3	-397.4	- 0.9%	+4,242.7	+10.6

* Includes conduct of R&D and R&D facilities.

[1] Amounts provided by continuing resolution expiring 30 September 1983.

[2] Reflects amendments to February budget request.

Argonne Lab Develops "Anti-Jet-Lag Diet"

SGR's far-traveling readers may be interested that we've been hearing enthusiastic reports about an "anti-jet-lag diet," developed by Charles F. Ehret of the Division of Biological and Medical Research at the Argonne National Laboratory. We haven't tried it yet, but a pair of round-trip New York-India travelers we know recently followed it and pronounced it astonishingly effective.

The diet, developed for travelers and shiftworkers on rotating schedules, is organized on a four-day pre- and travel-time schedule that alternates between high protein and high carbohydrate intakes. It goes as follows:

1. **Determine Breakfast Time** at destination on day of arrival.

2. **Feast-Fast-Feast-Fast**—Start four days before breakfast time in step 1. On day one, FEAST; eat heartily with high-protein breakfast and lunch and a high-carbohydrate dinner. No coffee except between 3 and 5 p.m. On day two, FAST on light meals of salads, light soups, fruits and juices. Again, no coffee except between 3 and 5 p.m. On day three, FEAST again. On day four, FAST; If you drink caffeinated beverages, take them in the morning when traveling west, or between 6 and 11 p.m. when traveling east.

3. **Break The Final Fast** at destination breakfast time. No alcohol on the plane. If the flight is long enough, sleep until normal breakfast time at destination, *but no later*. Wake up and FEAST on a high-protein breakfast. Stay awake and active. Continue the day's meals according to mealtimes at the destination.

Along with the above, further details about the "Argonne Anti-Jet-Lag Diet" are on a wallet-size, plastic-coated card, available without charge from the Office of Public Affairs, Argonne National Laboratory, 9700 South Cass Ave., Argonne, Ill. 60439

Who's Who in R&D Policy: NSF's Science Board

Keeping up to date with who's who in the Washington science-policy system, SGR presents the membership of the National Science Board (NSB), the policymaking body of the National Science Foundation. The Board, though mainly drawn from the upper echelons of academe, research, and industry, has generally tended to be inconspicuous and far from a major force in federal science-policymaking. But, with NSF's new Director, Edward A. Knapp, inexperienced on the Washington scene and off to less than a rocketing start, the NSB 's influence could expand.

Terms Expire May 10, 1984

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COSSA Washington Update, newsletter of the Consortium of Social Science Associations, provides news and analysis concerning government relations with the social and behavioral sciences. An upgraded version of COSSA's previous report to its members, associates, and affiliates, in some 50 scholarly organizations and major research universities, *Update* is published biweekly and available to all for a "contribution" of $25; address: COSSA, 1755 Massachusetts Ave. Nw., Washington, DC 20036.

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Soviet Space Programs: 1976-1980, a massive survey of Soviet space activities, prepared by the Congressional Research Service for the Senate Commerce, Science and Transportation Committee, reports that the Soviets have far exceeded the US in numbers of launches and overall tonnage in space and in expenditures—$9 billion for the US, $14-$28 billion for the Soviets in 1980. (445 pages, available without charge from Arlene Sidell, Senate Commerce Committee, Public information Office, Washington, DC 20510; enclose a mailing label.)

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Small Business Innovation Research Programs: Pre-Solicitation Announcement, an early guide to one of the biggest bundles of new money on the Washington R&D scene, the newborn program that requires most federal R&D agencies to set aside an annually rising sum for work by small firms. The guide, prepared by the Small Business Administration, names key officials in over a dozen agencies, lists their phone numbers (often not easy to find if you're starting cold), and identifies broad areas of interest. (14 pages, available without charge, from US Small Business Administration, Washington, DC 20416; request by title and specify SBIR/PS-2.)

1982 Freshmen Shunning Teaching Careers

Elementary and secondary school teaching has dropped to a new low in job aspirations of entering college freshmen, according to the latest round of an annual survey that began in 1966.

Conducted by UCLA's Graduate School of Education, in collaboration with the American Council on Education, the survey of 1982 freshmen found only 4.7 percent of them aspiring to such teaching careers, compared with 21.7 in 1966. College teaching is also in decline as a job goal—dropping from 3.5 to 1.5 percent over that period; the same goes for scientific research, from 3.5 to 1.5, and social work, from 2.9 to 1.1 percent.

Going up in popularity were business, from 11.6 to 20.2 percent; engineering, from 4.7 to 12.0, and computer programmer/analyst, from 2.9 to 8.8 percent. The survey results were drawn from 188,600 questionnaires returned by students from 350 two- and four-year colleges and universities.

The desirability of "being very well off financially" was found to rank high with the freshmen of 1982, with 68.9 percent of them endorsing that value, compared to 43.5 percent in 1967. In fact, in an 18-item list of "Objectives considered to be essential or very important," financial well-being came out tops on a list that ranged from "create artistic work" to "have administrative responsibility."

In line with that, college attendance as a means to making more money drew a strong return. Nearly 70 percent of today's freshmen saw a link between college and earning power as "very important," compared with a touch under 50 percent in 1971.

On the downside, the 1982 students overall showed far less interest in "developing a meaningful philosophy of life" and in "helping others in difficulty," though that latter item, was ranked at or near the top by women in all geographical regions.

Commenting on the sharply declining interest in teaching, Alexander W. Astin, the UCLA Professor who directed the study, offered a bleak interpretation and forecast:

"Since recent studies of college admissions tests show that education majors have much weaker academic skills than students majoring in most other fields, it appears that we are headed for a crisis not only in the quantity but also in the quality of persons who want to teach in our elementary and secondary schools."

(The survey report, titled "The American Freshman: National Norms for Fall 1982," 173 pages, is available for $7.50 per copy from the Cooperative Institutional Research Program, Graduate School of Education, 405 Hilgard Ave., UCLA, Los Angeles, Calif. 90024.)

NIH Honors Shannon

The original administration building on the Bethesda, Md., campus of the National Institutes of Health was named the James A. Shannon Building on January 18 in honor of the former NIH Director who headed the agency during its greatest period of postwar growth. Shannon, who became Director in 1955, presided over a boom in which the budget rose from $71 million to $1.1 billion in 1968, when he retired from government service. He subsequently joined the faculty of Rockefeller University, from which he retired in 1975, and currently lives in Oregon. The Shannon Building, formerly known only as Building One, houses the office and several administrative appendages of the NIH Director.

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